UNDERWATER BRIDGE INSPECTION REPORT

STRUCTURE NO. 49528

CSAH NO. 26

OVER THE

MISSISSIPPI RIVER

DISTRICT 3 - MORRISON COUNTY

PREPARED FOR THE

MINNESOTA DEPARTMENT OF TRANSPORTATION

BY

COLLINS ENGINEERS, INC.

JOB NO. 5221 (CEI 79)

MINNESOTA DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

REPORT SUMMARY:

The substructure units inspected at Bridge No. 49528, Piers 1 through 3, were found to be in good condition with no structurally significant defects observed. Minor deficiencies were observed and consisted of a poorly formed construction joint, minor areas of poorly consolidated concrete, and light scaling near the waterline. The channel bottom inspected around the substructure units appeared stable with no evidence of significant scour or appreciable changes since the previous inspection.

INSPECTION FINDINGS:

(A) A poorly formed construction joint was observed at approximately 2.5 feet above the channel bottom at Pier 2. The upper portion of the joint overlapped the lower portion by 1/2 to 1 inch.

(B) The concrete surfaces of the piers were typically smooth and sound with random minor areas of poor consolidation with up to ½ inch penetration.

(C) An area of impact damage was observed on the southwest corner of the upstream column of Pier 1 at 2 feet above the waterline (top of webwall). The impact damage was 1 foot high, 4 inches wide, with 1 inch of maximum penetration with no exposed reinforcing steel.

(D) Steel construction debris consisting of a 5 foot long W-section was lying on the channel bottom adjacent to west side at midpoint on Pier 2.

(E) The top of the webwall at Pier 3 was delaminated with a maximum penetration of ½ inch with no exposed reinforcing steel. The concrete below the delamination was rough but sound.

RECOMMENDATIONS:

(A) Reinspect the submerged substructure units at the normal maximum recommended (NBIS) interval of five (5) years.

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Daniel G. Stromberg

Date 6/30/2008 Registration No. 21491

Respectfully submitted,

COLLINS ENGINEERS, INC.

Daniel G. Stromberg
Registered Professional
Engineer, State of Minnesota

MINNESOTA DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

1. BRIDGE DATA

Bridge Number: 49528

Feature Crossed: Mississippi River

Feature Carried: CSAH No. 26

Location: District 3 - Morrison County

Bridge Description: The superstructure consists of four spans of continuous welded plate girders supporting a reinforced concrete deck. The superstructure is supported by three reinforced concrete piers and two reinforced concrete abutments. The piers and abutments are supported by steel H-piles. The piers are numbered 1 through 3 starting from the west.

2. INSPECTION DATA

Professional Engineer/Team Leader: Bradley A. Syler, P.E., S.E.

Dive Team: John J. Loftus, Valerie Roustan

Date: August 16, 2007

Weather Conditions: Sunny, 59°F

Underwater Visibility: 5.0 feet

Waterway Velocity: 2.0 f.p.s.

3. SUBSTRUCTURE INSPECTION DATA

Substructure Inspected: Piers 1 through 3

General Shape: The piers consist of a reinforced concrete two column hammerhead pier supported by a rectangular footing founded on steel H-piles.

Maximum Water Depth at Substructure Inspected: Approximately 7.3 feet.

4. WATERLINE DATUM

Water Level Reference: The top of the pier cap on the south end of Pier 1.

Water Surface: The waterline was approximately 18.1 feet below reference.
Waterline Elevation = 1028.4.

5. NBIS CODING INFORMATION (Minnesota specific codes are used for 92B and 113)

Item 60: Substructure: Code 7

Item 61: Channel and Channel Protection: Code 7

Item 92B: Underwater Inspection: Code B/08/07

Item 113: Scour Critical Bridges: Code I/91

Bridge is scour critical because abutment or pier foundation is rated as unstable due to observed scour at bridge site.

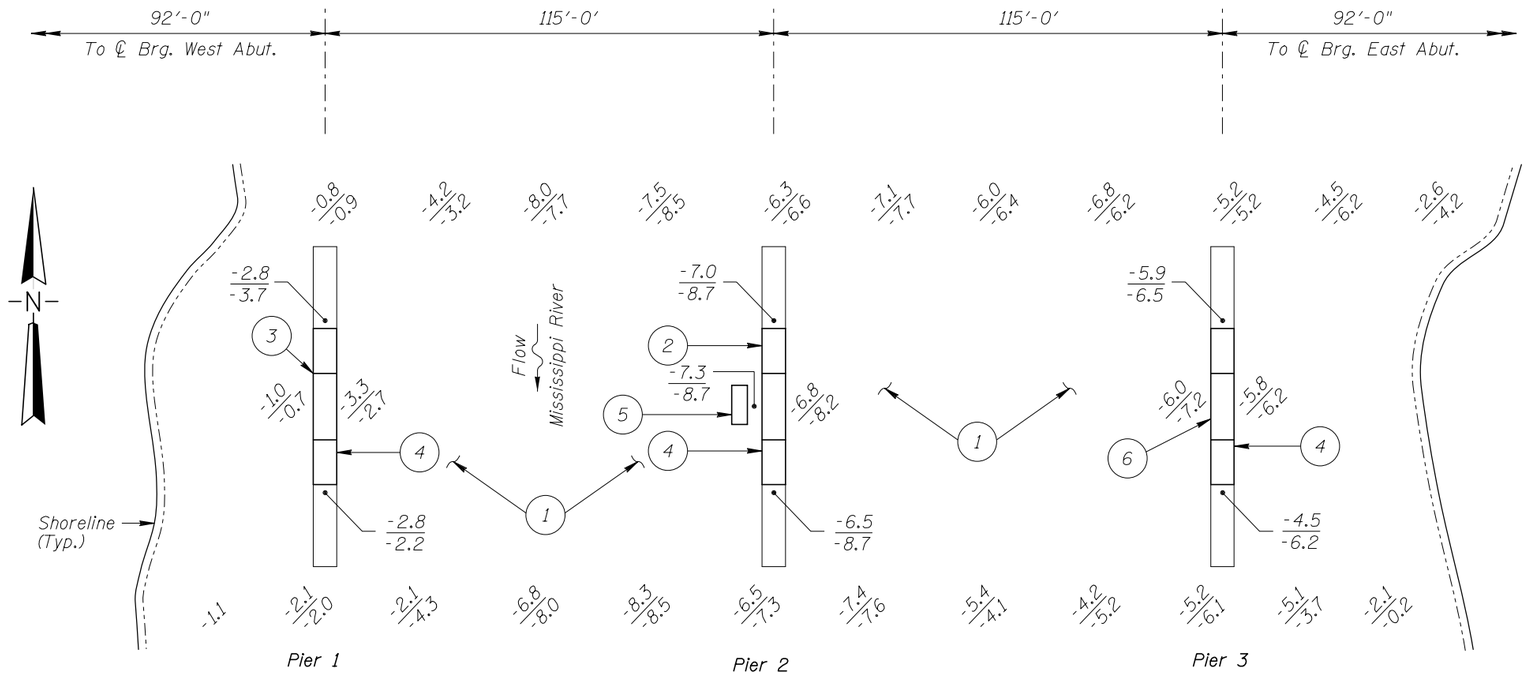
_____Yes X No

Photograph 1. Overall View of the Structure, Looking Southeast.

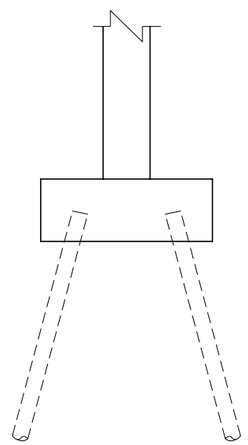
Photograph 2. View of Pier 1, Looking Southwest.

Photograph 3. View of Pier 2, Looking East.

Photograph 4. View of Pier 3, Looking East.



SOUNDING PLAN



TYPICAL END VIEW OF PIERS

GENERAL NOTES:

1. Piers 1 through 3 were inspected underwater.
2. At the time of inspection on August 16, 2007 the waterline was located approximately 18.1 feet below the top of the pier at the downstream end of Pier 1. This corresponds to a waterline elevation of 1028.4 based on the previous report dated September 27, 2002.
3. Soundings indicate the water depth at the time of inspection and are measured in feet.
4. Soundings were taken parallel to the bridge at 1/4 point intervals between the substructure units.

INSPECTION NOTES:

(1) The channel bottom material consisted of gravel and up to 12 inch diameter riprap with no probe rod penetration.

(2) A poorly formed construction joint was observed with the upper portion overlapping the lower portion by 1/2 to 1 inch at approximately 2.5 feet above the channel bottom.

(3) Area of impact damage on the southwest corner of the upstream column of Pier 1 at 2 feet above the waterline (top of webwall). The impact damage was 1 foot high, 4 inches wide, with 1 inch maximum penetration with no exposed reinforcing steel.

(4) The concrete surfaces of the piers were typically smooth and sound with random minor areas of poor consolidation with up to 1/2 inch penetration.

(5) Steel construction debris consisting of a 5 foot long W-section was laying on the channel bottom adjacent to the west side at midpoint of Pier 2.

(6) The top of webwall at Pier 3 was delaminated with a maximum penetration of 1/2 inch with no exposed reinforcing steel. Concrete below the delamination was rough but sound.

Legend

-9.8	Sounding Depth (8/16/07)
-9.8	Sounding Depth (9/27/02)

Note:

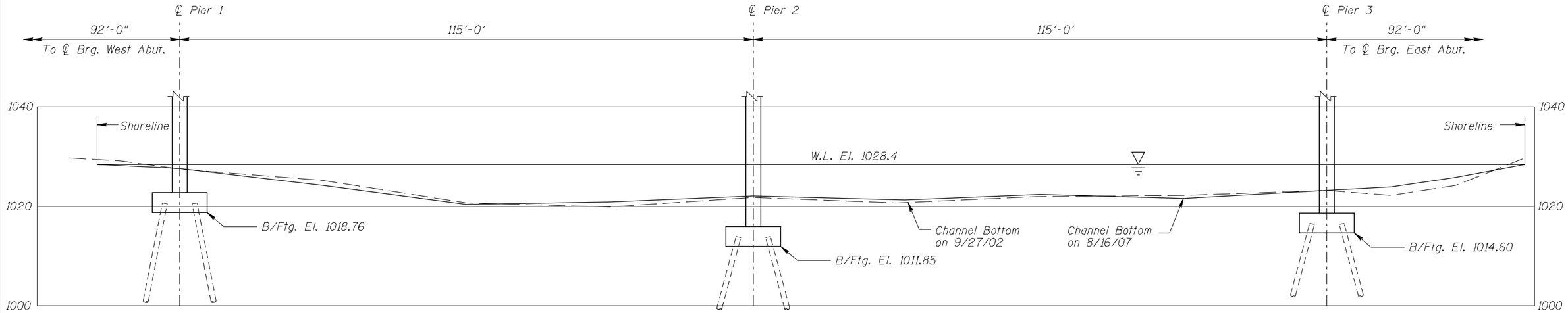
All soundings based on 2007 waterline location.

MINNESOTA
DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

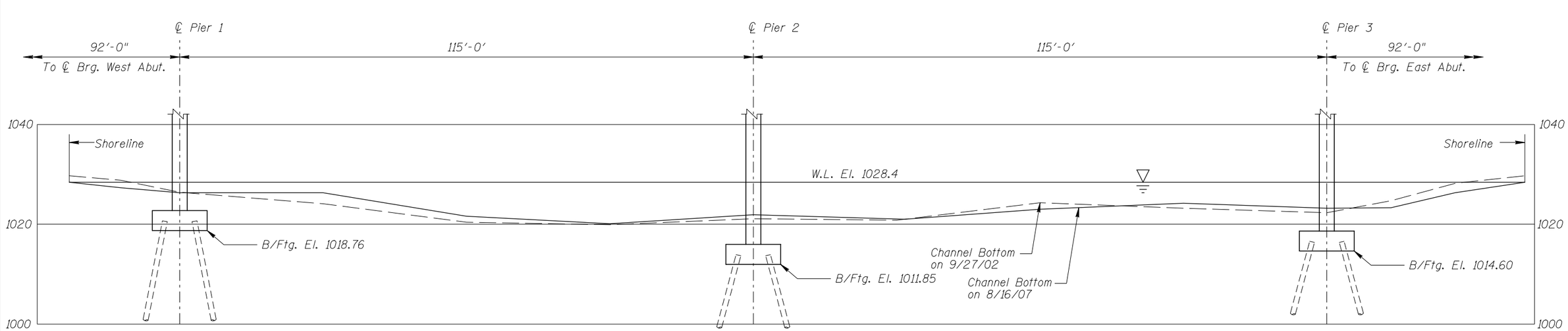
STRUCTURE NO. 49528
OVER THE MISSISSIPPI RIVER
DISTRICT 3, MORRISON COUNTY

INSPECTION AND SOUNDING PLAN

Drawn By: PRH	COLLINS ENGINEERS, INC. 123 North Wacker Drive Suite 300 Chicago, Il. 60606 (312) 704-9300 www.collinsengr.com	Date: AUGUST, 2007
Checked By: MDK		Scale: NTS
Code: 52210079		Figure No.: 1



UPSTREAM FASCIA PROFILE



DOWNSTREAM FASCIA PROFILE

MINNESOTA
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INSPECTION AND SOUNDING PLAN

Drawn By: PRH	COLLINS ENGINEERS 123 North Wacker Drive Suite 300 Chicago, Il. 60606 (312) 704-9300 www.collinsengr.com	Date: AUGUST, 2007
Checked By: MDK		Scale: 1"=20'
Code: 52210079		Figure No.: 2

MINNESOTA DEPARTMENT OF TRANSPORTATION
OFFICE OF BRIDGES AND STRUCTURES
DAILY DIVING REPORT

INSPECTORS: Collins Engineers, Inc. DATE: August 16, 2007

ON-SITE TEAM LEADER: Bradley A. Syler, P.E., S.E.

BRIDGE NO: 49528 WEATHER: Sunny, 59°F

WATERWAY CROSSED: Mississippi River

DIVING OPERATION: X SCUBA _____ SURFACE SUPPLIED AIR

_____ OTHER _____

PERSONNEL: John J. Loftus, Valerie Roustan

EQUIPMENT: Scuba, U/W Light, Scraper, Sounding Pole, Fathometer, Lead Line, Probe Rod, Camera

TIME IN WATER: 8:30 A.M.

TIME OUT OF WATER: 9:10 A.M.

WATERWAY DATA: VELOCITY 2.0 f.p.s.

VISIBILITY 5.0 feet

DEPTH 7.3 feet maximum at Pier 2.

ELEMENTS INSPECTED: Piers 1, 2 and 3

REMARKS: The concrete surfaces of the piers were typically smooth and sound with random minor areas of poor consolidation. A poorly formed construction joint was observed with the upper portion overlapping the lower portion by ½ to 1 inch at Pier 2. An area of impact damage was observed on the southwest corner of the upstream column of Pier 1 at 2 feet above the waterline. Steel construction debris consisting of a 5 foot long W-section was lying on the channel bottom adjacent to west side of Pier 2. The top of the webwall at Pier 3 was delaminated with a maximum penetration of ½ inch with no exposed steel. The channel bottom was firm and stable with no signs of significant scour.

FURTHER ACTION NEEDED: _____ YES X NO

Reinspect the submerged substructure units at the normal maximum recommended (NBIS) interval of five (5) years.

MINNESOTA DEPARTMENT OF TRANSPORTATION
OFFICE OF BRIDGES AND STRUCTURES

UNDERWATER INSPECTION CONDITION RATING FORM

BRIDGE NO. 49528
INSPECTORS Collins Engineers, Inc.
ON-SITE TEAM LEADER, Bradley A. Syler, P.E., S.E.
WATERWAY CROSSED Mississippi River

INSPECTION DATE August 16, 2007

NOTE: USE ALL APPLICABLE CONDITION DEFINITIONS AS DEFINED IN THE MINNESOTA RECORDING AND CODING GUIDE INCLUDING GENERAL, SUBSTRUCTURE, CHANNEL AND PROTECTION, AND CULVERTS AND WALL DEFINITIONS TO COMPLETE THIS FORM.

CONDITION RATING

			SUBSTRUCTURE						CHANNEL					GENERAL					
UNIT REFERENCE NO.	UNIT DESCRIPTION	MAXIMUM DEPTH OF WATER	PILING	COLUMNS, SHAFTS, OR FACES*	FOOTINGS	DISPLACEMENT	OTHER	OVERALL SUBSTRUCTURE CONDITION CODE*	SCOUR	EMBANKMENT EROSION	EMBANKMENT PROTECTION	OTHER (DRIFT/DEBRIS)	OVERALL CHANNEL & PROTECTION CONDITION	CONCRETE	STEEL	TIMBER	LOSS OF SECTION	PREVIOUS REPAIR OR MAINTENANCE	OTHER
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
	Pier 1	3.3’	N	7	N	9	N	7	8	8	8	N	8	7	N	N	N	N	N
	Pier 2	7.3’	N	7	N	9	N	7	8	N	N	7	7	7	N	N	N	N	N
	Pier 3	6.0’	N	7	N	9	N	7	8	7	7	N	7	7	N	N	N	N	N

*UNDERWATER PORTION ONLY

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NOTES: ATTACH SKETCHES AS NEEDED, IDENTIFY REMARK BY REFERRING TO UNIT REFERENCE NO. AND REMARK NO.
USE GENERAL SECTION TO IDENTIFY OVERALL PRESENCE OF SPALLS, CRACKS, CORROSION, ETC.